

Docket No. AUS9-2000-0436-US1

## ABSTRACT OF THE DISCLOSURE

### 5 BI-DIRECTIONAL STACK IN A LINEAR MEMORY ARRAY

A method, system, and apparatus for placing and removing data elements into a bi-directionally growing first in last out data structure is provided. In one embodiment, in response to a request to place a data element into the data structure, a head pointer is  
10 advanced one memory location in a direction indicated by a state of a direction flag. The new data element is placed into the memory location indicated by the head pointer. The position of the head pointer and the base pointer are swapped in preparation for receiving a new data element and the state of the direction flag is reversed to indicate growth of the data structure in the opposite direction. In response to a request to  
15 remove a data element from the data structure, the head and base pointers are swapped and the state of the direction flag is reversed. The element indicated by the location pointed to by the head pointer is removed and the head pointer retreats one memory location position in a direction opposite the direction indicated by the direction flag.

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